

In re Patent Application of:  
**HOGAN ET AL.**  
Serial No. 10/700,948  
Filed: OCTOBER 31, 2003

---

IN THE CLAIMS

1. (currently amended) A transmitter optical sub-assembly (TOSA) for mounting in a host opto-electronic device comprising:

- a laser diode for generating an optical signal;
  - a monitor diode for monitoring output from the laser diode;
  - a housing for supporting the laser diode and the monitor diode;
  - a lens system for focusing the optical signal onto an optical fiber, which transmits the optical signal from the TOSA;
  - a window in a side of the housing forming a hermetic seal therewith for passing the optical signal therethrough;
  - a bore mounted outside of the housing for receiving an end of the optical fiber;
  - an electronic circuit, mounted in the housing, including a differential drive circuit with at least six trace leads in a substrate circuitry for transmitting electronic signals to the laser diode;
  - a multi-layer ceramic feedthrough for transmitting electronic signals to the differential drive electronic circuit from the host device; and
  - an electrical connector extending from the ceramic feedthrough electrically connecting the host device with the ceramic feedthrough;
- ~~wherein the electrical connector comprises six leads;~~  
wherein two of the trace leads are for transmitting RF signals to the laser diode;  
wherein two of the trace leads are for transmitting DC bias signals to the laser diode;

In re Patent Application of:  
**HOGAN ET AL.**  
Serial No. 10/700,948  
Filed: OCTOBER 31, 2003

---

wherein two of the trace leads are for transmitting signals to and from the monitor diode;

wherein ~~the circuitry includes~~ an impedance matching film resistor is formed in electrically connected to at least one of the two trace leads for transmitting RF signals to the laser diode to match laser impedance to an impedance of a transmission line and to an output impedance of a laser driver integrated circuit; and

wherein ~~the circuitry includes~~ an inductive choke component is disposed in electrically connected to at least one of the two trace leads for transmitting DC bias signals to the laser diode to enable DC current to be fed to the laser diode without a reduction in the RF signals.

2. (original) The TOSA according to claim 1, wherein the multi-layer ceramic feedthrough includes one layer for transmitting the RF signals, and one layer for transmitting the DC bias signals.

3. (original) The TOSA according to claim 1, wherein the housing includes a bottom and four sides; and wherein the four sides are comprised of multiple layers of ceramic.

4. (original) The TOSA according to claim 1, wherein the housing includes a bottom and four sides; and wherein three of the sides are comprised of a low thermal expansion material.

5. (original) The TOSA according to claim 4, wherein the bottom includes a portion of thermally conductive material for dissipating heat from within the housing.

In re Patent Application of:  
**HOGAN ET AL.**  
Serial No. **10/700,948**  
Filed: **OCTOBER 31, 2003**

---

6. (original) The TOSA according to claim 1, further comprising a bore mounting flange mounted on the housing, whereby any size of bore may be connected thereto for receiving any size of optical connector mounted on an end of the optical fiber.

7. (original) The TOSA according to claim 1, wherein the lens system included a first and a second lens; wherein the first lens is disposed inside the housing adjacent the laser diode; and wherein the window comprises the second lens disposed outside of the housing for focusing the optical signal from the first lens onto the optical fiber.

8. (original) The TOSA according to claim 1, wherein the electrical connector is comprised of a flexible electrical connector.

9. (original) The TOSA according to claim 1, wherein the housing is hermetically sealed.

10. (original) The TOSA according to claim 1, wherein the housing is less than 6.0 mm wide.

11. (original) The TOSA according to claim 1, further comprising temperature control means for controlling the temperature inside the housing.

12. (original) The TOSA according to claim 11, wherein the temperature control means comprises a section of thermally conductive material forming part of the housing.

In re Patent Application of:

**HOGAN ET AL.**

Serial No. **10/700,948**

Filed: **OCTOBER 31, 2003**

---

13. (original) The TOSA according to claim 1, wherein the circuitry is formed in a ceramic substrate extending contiguously from the ceramic feedthrough.

14. (new) The TOSA according to claim 1, wherein the inductive choke component is positioned close enough to the laser diode to prevent unwanted resonance that disrupt or degrade the RF signal transmission for data rates greater than or equal to 10 Gb/s.